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Cursory Remarks

on

Amputation of the Extremities.

by

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of

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The operation of Amputation must ever be looked upon as one of the most important that the Surgeon can be called upon to perform, as it always involves the Patient in acute suffering and consigns him to irremediable deformity. Did the difficulty of its performance bear any ratio to the importance of its effects on the unhappy Patient, perhaps we should not find it so common an operation as it always has been, but, (I had almost said unfortunately,) it is one of the simplest in Surgery, & to this cause I am afraid we must look in some degree for its frequency in former times; a frequency that the march of Science has shewn us to have been but too often totally unnecessary. In fact the older Surgeons took off an arm or a leg with so little hesitation, that one would think they had imagined mankind possessed of the same Reemperative powers that Naturalists have discovered in some of the Crustaceous fishes, which on losing a leg are soon accommodated

with a new one from the stump. Of all the extensive improvements in Surgery perhaps none are of greater importance than those relating to the subject in question, & the caution with which the Surgeon now proceeds to this operation is alike honorable to himself & beneficial to humanity. Who can see a fellow being deprived of a leg & limping along by the aid of a crutch, & not ask himself, 'might not that limb have been saved?' — Or who can see an industrious man deprived of that right arm which has gained him an honest subsistance & not deeply deplore the necessity that demands the sacrifice? The responsibility that rests on the Surgeon who is called in to decide on the propriety of Amputation, is indeed awful! — I say "awful" for I know of no other term strong enough to express it. It is not that the Patient is to suffer pain, for an hour, a week, or a month, this is a minor consideration: but it is that he is to suffer a shocking & lasting mutilation, which will in a greater or less degree shut him out from those comforts

& enjoyments common to the rest of the world, & render him an object of pity, & observation, to the end of his days. But this is not the worst: if poor he is rendered unable to provide for himself & he is left a wearisome burthen to his friends, or become a miserable dependant on public Charity, a sad wanderer thro' an unfeeling world. — "Morbid Sensibility" and "Specious humanity" should be alike avoided in the contemplation of the subject of these pages, yet I fear that the eclat attendant on a successful operation sometimes induces young Practitioners to sacrifice a limb even against their better judgment; I hope I may be wrong, but if there are any such, "let them speak, for them have I offended." — At this stage of my dissertation, it may not be improper for me to make some remarks on the different positions occupied in regard to practice &c by Civil & Military Surgeons, for to the first the observations already made are more particularly applicable. In civil life the Surgeon has every necessity & every comfort

within his reach which can contribute to lessen the wants, & hasten the cure of his patient. No perilous exposures, no cruel deprivations are to be guarded against; his visits are regulated by his own will & the object of them, is usually nursed with tender care, & cheered by the smiles of anxious Friendship. Let us now turn to the Army Surgeon, how vast the difference! his wounded Patient is laid on a little straw upon the damp, cold ground & but half sheltered by a tent, his situation is cheerless & destitute; no light, grateful, article of diet is to be procured, bad water and worse bread constitute his hospital fare, even medecines are scarce. The Surgeon has more duty to do than he can possibly perform, & the Soldier suffering from anguish & neglect, looks forward to the grave with the dismal sensations of despair. In the Navy, the Sailor with his shattered limb is thrust below in a crowded Ship, where he sighs in vain for a draught of that pure air which seems a common gift to all. All those

attentions which mitigate the severity of mental anx=
:iety & bodily pain, are to him unknown. His days
of suffering & nights of woe pass in cheerless monot=
:ony, & his recovery is retarded by bad nursing, a foul
atmosphere, constrained accommodation & a want of
proper supplies. Under such circumstances a varia=
:tion in practice must be demanded, & a limit which
the Military Surgeon is perfectly justified in amputa=
=ting the Civil Practitioner would be wrong to give up
without an endeavour to save. —— Paramount to
every other consideration is the preservation of life, &
subservient to this purpose in an eminent degree are
the operations of Surgery, & perhaps none more so, than
those, which by sacrificing a part secure the general
good. The observations with which I have commenced
this paper, are only intended to caution on the unneces=
:sary & ill judged resort to this alternative & to enforce
the necessity of reflection & an appeal to the judgment
ere this important & irremediable step is taken; which

Alas! from the imperfection of the healing art, is but too often indispensably necessary. I will not trace the history of amputation nor swell my pages by the introduction of matter which certainly is better adapted to gratify the curiosity of a Physician than to reward the researches of a Student. I shall speak of the diseases & accidents requiring amputation of the extremities, the Time at which it should be done, & the mode of doing it. Amputation then may be demanded, 1st by Gun-shot wounds & fractures, 2d by Compound dislocations. 3d by Mortification. 4th by Tumors. 5th by Diseased Joints. 6th by Ulcers. — And first of Gun-shot wounds. almost every Surgeon who has written a book, gives us a number of aphorisms, by which to govern ourselves in regard to the propriety of amputating in injuries of this kind; and Larrey† gives us 8 cases in which a Gun-shot wound may require the immediate performance of the operation. These no doubt should be well studied together with the remarks of Dr Hennen,‡ but after

† Memoirs. p. 78. vol. 2. ‡ Mil. Surgery. p. 39.

all, it is not to expected that the Surgeon will be governed by the "ipse dixit" of any man. In time of need it is by an appeal to his judgment, matured by reflection & experience, that he will decide on the proper course to pursue. If a limb is shot off, there can be no doubt as to the propriety of amputating the stump. And in general its propriety is indicated when a ball shall have torn away the principal blood vessels & nerves of a limb, or extensively fractured the bones, and contused & lacerated the soft parts, or torn open a joint. But when a Surgeon can command comfortable accommodations & supplies for his patient, even the most unfavourable injuries may have a happy result. A Soldier received a ball thro the Knee-joint, it entered at "the external condyle of the femur push under the edge of the Patella & passing obliquely downwards & backwards, made its exit where the inner condyle meets the Tibia". Amputation was twice proposed, the Patient refused & finally got well with a

stiff joint. x A similar case is given by Professor Gibson. Dr. Mann has recorded three cases which occurred in the Naval victory on Lake Champlain, where extensive injury of the parts about the shoulder joint was caused by Cannon balls. ǂ" Fragments of the humerus, clavicle. & acromion process were removed, as well as such portions of the muscles as appeared to be deadened by the ball." These Patients recovered with arms not much disfigured & of some use. These cases were precisely such as we are advised by European writers to Amputate. Dr. Hennen states that wounds of the shoulder joint, are however not so dangerous as those of the Knee, Ankle. or Elbow. By reference to the writings of Hunter, Larrey Hennen, Faure, & others, I might collect numerous cases to prove that the severest wounds of the extremities often get well without the operation; even this however is not always desirable, for the limb may be reduced to such a state from the effects of the injury, as to be a useless & inconvenient appendage of which the Patient

x Mann's Med. Sketches. p 210.
ǂ Idem. p 208.

would gladly be rid. Hennen mentions a case where an operation for the removal of the troublesome member, was submitted to, thirty years after the receipt of the original wound. Fractures from Gun-shot are always dangerous, their danger decreases in the long bones of the extremities in proportion to their distance from the ar=:ticular ends of the bones. Compound fractures from other causes are often a source of great danger. The well known case of Mr. Percival Pott is calculated to teach us great caution in resorting to the operation in such cases. Injuries of this kind done to the Thigh are particularly dangerous. In civil life the question of amputation is to depend on the extent of the injury & state of the Patients constitution alone; the Military Surgeon in addition to these circumstances must be gov=:erned by his opportunity of pursuing a regular course of treatment & the degree and kind of exposure to which his patient must necessarily be subjected. — Compound Dislocations will sometimes demand amputation

for they may be attended by an immense deal of injury to the Joints in which they occur. Dr Gibson witnessed a case where the knee joint was torn open & the bones at the same time luxated, & yet the limb was saved. This must be regarded as a very uncommon termination & cases of this nature in general call loudly for Amputation. Compound dislocations of the ankle joint are not unfrequently met with, & being always complicated with fracture are attended by the most serious consequences. Boyer has recommended amputation of the leg, for simple dislocation of the astragalus, but I imagine few Surgeons much less Patients, would be governed by his advice. Dr Physick is opinion that even in bad cases the operation should not be resorted to.x Instances however will occur rendering the use of the Knife decidedly proper; the following I take to be of this kind. In the month of October last I was called to a Sailor who had fallen from a height of about forty feet in the U.S Navy Yard

x MS. Lectures.

at Gosport Va., producing a compound dislocation of the ankle joint. The lower end of the Fibula was broken off, the Tibia projected internally. The Astragalus was fractured thro' the centre and the anterior half was hanging from the wound; the muscles of the leg were severely contused and the Ligamentum Patellæ ruptured, the Patella itself being drawn up on the thigh. The man was about 38 years of age and of intemperate habits. He was removed to the U.S. Naval Hospital under the charge of Dr. T. Williamson, & immediate amputation of the thigh determined on. The Patient refusing to submit to the operation, the pendant portion of the astragalus was removed, the parts restored as much as possible to their natural situations & retained by the usual means. The Bowels were now kept in a soluble state & a light nourishing diet prescribed, with a little Brandy & water & an occasional opiate. On the 5th day he complained of very little pain, the leg & thigh had a dark hue & were considerably tumefied, a dark

matter was discharged from the wound, in which there was but little appearance of healthy action. Pulse intermitting. light poultices were applied & the Brandy increased. 6th day, delirious at night. 7th much the same. 8th appeared sinking, stimulants had been increas:=sed. at 2 P.M. he died. This case so evidently called for amputation that the strongest arguments were used with the Patient but to no effect. On dissection it was found that Gangrene had taken place along the bones of the leg. — Mortification is a third source of amput:=tation. The older Surgeons were in the habit of per=:forming the operation as soon as Mortification had seiz:=zed on an extremity; after a time the fallacy of this Practice was exposed & then Surgeons ran into the opposite extreme, & waited patiently in every case for the "Line of separation" to take place. Of the two modes of prac:=tice I think that of the old Surgeons was preferable; they, it is true, often subjected their Patients to the pain of needless operations; whilst the others in certain

cases allowed the unfortunate subjects of the disease to fall a prey to it without making an effort to restrain its ravages. To Baron Larrey we are indebted for the all important distinction between "Traumatic and Spontaneous Gangrene", the first being arrested by amputation, the second only stopping when the line of separation, between it & the living parts is established. In 1796 at Toulon, this Eminent man, amputated a leg in which Mortification had taken place & "which continued to advance", the man was completely cured. Since then the soundness of this practice has been perfectly established & the high authority of Dr. Hennen is decidedly in in its favour. If then Gangrene arises from a wound Amputation should be at once performed; if it is a constitutional affection the operation is to be delayed until nature has arrested the progress of the complaint. Hospital Gangrene is an endemic disease & requires Medical, rather than Surgical treatment. Certain Tumors may demand Amputation, such are Spina Ventosa

Osteo-Sarcoma, & Fungus Hæmatodes. The progress of these last diseases seems scarce capable of being controlled even by an operation. Fungus Hæmatodes, in particular seems to be rather a constitutional, than a local disease. An Operation in its forming stage presents the only chance for recovery; if it is postponed a temporary benefit will alone be derived, & in a short time the affection will make its appearance in some other part, and most probably the structure of the lungs becoming contaminated the Patient will sink into the grave with all the Symptoms of Phthisis Pulmonalis. These observations are equally applicable to Osteo-Sarcoma. Too much caution cannot be used in operating for these complaints, for they may be confounded with others of a less dangerous nature & thus irreparable mischief be done. — In civil life the Surgeon is perhaps more frequently called upon to amputate on account of diseased Joints, than from any other cause. In these cases the Knife should be the last resort, for

they will often get well when apparantly incurable. When the resources of the Physician have been all tried and found useless; when the apparatus of the Surgeon has failed to do good; when night sweats have come on; when Diarrhœa has supervened, & the bright flush on the Cheek tells that the Patient is falling a Victim to Hectic; it is then & not not before that we should resort to amputation. The operation often succeeds perfectly, and the Patient is, as it were, snatched from the open jaws of the Grave. Yet, unhappily, there is a singular disposition of internal parts to take on diseased action, after the irritating joint has been removed. In consequence of this our fondest hopes of a cure are often suddenly defeated & the pallid hand of death, but too frequently destroys the brightest prospects of a speedy convalescence. I have seen a leg amputated on account of a Scrofulous condition of the bones of the Tarsus, of long standing, & in three weeks the Patient died of disease of the lungs. Hennen gives instances of this kind where

Hectic had existed previous to amputation. In one of these an abscess was formed in the Liver. — Ulcers sometimes require amputation to be performed, but such cases are not common. If however a Patients limb is rendered useless to him, if the bones become involved in the disease; if all means of cure have failed, and the constitution is suffering from the irritation, then the use of the knife is perfectly justifiable. Or, if the ulcer shall have taken on a Cancerous or other malignant disposition it is still required. The remarks previously made in regard to internal organs taking on diseased action after amputation, are here fully applicable. Amputation is sometimes performed on account of the disease called Elephantiasis. I have seen many cases of this complaint in the Brazils, & the feet & legs of some of its subjects were enormously enlarged, & not unfrequently ulcerated, yet I never saw one that would justify the operation. ——

The proper period for performing Amputation in cases of

Gun-shot and other wounds & Injuries, is next to be con=
=sidered. The true practice on this point is very clear.
When an injury has been received, which renders an
operation necessary, the sooner it is done after re-action
is established, the better. Military Surgeons usually
divide amputations into "primary" or all such as are
performed within 24 hours after the receipt of the injury,
and into "Secondary", which include, all those cases in
which, the operation is afterwards performed. But this
division is vague & unsatisfactory. I shall therefore
with Le Conte, x divide amputations into 3 classes.
viz. — 1st. All operations performed within 24 hours
after the receipt of the injury, or what is usually
meant by "Primary Amputation". — 2d. All those cases
in which Amputation has been postponed, not with
a view to saving the limb, but that the primary
symptoms may pass away, which is the "Consecutive
amputation" of Faure. and 3d. all those cases, in
which the operation may become necessary after every

x Prix de l'Academie. vol 3. 1756.

endeavour to restore the limb has failed. This may happen months after the receipt of the Injury. — Surgeons have been for a long time divided touching the proper time for amputation, & whilst one party advocated the immediate use of the Knife, the other deferred it until certain changes had been wrought in the system, which they considered essential to a ~~safe~~ successful termination of their exertions. This may in some degree be considered as yet remaining a moot point, & it is one, on which a great deal has been said & written. In 1756 the Royal Academy of Surgery at Paris made it a prize question, and in adjudging the Medal to Faure, gave their sanction to the plan of deferring the operation. According to those who supported this doctrine, amongst whom was the celebrated John Hunter, the concussion of the Ball gave so severe a shock to the whole system, that 15 or 20 days in many cases should be suffered to elapse, prior to taking up the Knife. Besides, said they, the mind at

the moment of the receipt of the wound is in an extreme-
: ly agitated state; time will calm this, and Reconcile
the Patient to the loss of his limb: and after all the
amputation is to be considered as "a violence superi-
=added to the injury". x Perhaps a greater error than
the practice founded on such reasoning never crept
into Surgery. Even Paure, however, who has generally
been considered as the author of this practice, gives
6 cases, in which amputation should be performed on
the field of Battle. + Le Conte gives 7 to the same
effect, 6 in which nature should be allowed to recover
herself, and 5 in which the operation should be in-
=definitely postponed. The subsequent experience of
Military Surgeons has effectually settled this point,
& proved that these Gentlemen were in the wrong.
There can be no doubt on a review of the subject, that
the Surgeon who defers Amputation that the primary
symptoms may pass off & the Patient after some days
may be in a better condition for bearing the operation

x Hunter.
+ Prix de l'Academie. vo. 3.

pursue a line of conduct based on fallacious hopes &
which will too generally eventuate in the misery and
death of his unfortunate patient. On this point the
works of Hennen & Larrey are particularly explicit.
It is now an established fact, that the Patient bears
amputation much better immediately after re-action has
taken place, than at any other period; and what is of great
importance, he is now generally willing to submit to the
decision of his Surgeon; whereas if deferred a great
deal of difficulty may be experienced on this head.
Of 60 primitive amputations performed after the Naval
action of June 1st. 1794, but two proved fatal. A
result sufficient to overthrow whole volumes of theoret:
:ical arguments for consecutive operations: which
should only be performed under the circumstances set
forth in the 3d. Class which I have formed of cases requi:
:ring it: And never on the principle set forth in Division
No. 2. — Hours, may be allowed for Symptoms to pass
away, but never days. A great object obtained by the

Army Surgeon in at once operating is the greater facility & ease with which the wounded Soldier can be transport= :ed from one place to another, an object which should never be lost sight of. What can be more dreadful than the situation of a crowd of wounded Soldiers, thrown hastily in a waggon, with their limbs shattered & torn by bullets, the fragments rubbing together, each incommoding and injuring his neighbor, & every jolt of the carriage carrying unspeakable misery to these sad victims of consecutive Amputation. And yet, Mr. Hunter went further than even the French writers in advocating this order of things. How excellent is this observation of Mr. Percival Pott: "implicit faith is not required from man to man; and our reverence for our predecessors must not prevent us from using our own judgments."— x The Army Surgeon then must operate on the field of Battle, as soon after the receipt of the wound demanding it, as circumstances will permit. Naval engagements usually being of short duration

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the Surgeons first endeavours should be to arrest the flow of blood & after the fight the amputations should be forthwith performed in the most eligible situation that can be procured. The Cock-pit should never be used for this purpose if it can be avoided. In Civil Surgery the question of the period for amputating, from the nature of the diseases commonly requiring the operation & the facilities for attendance, is a matter of comparatively small importance & the Surgeon will commonly find but little difficulty in pursuing a proper course. Having now spoken of the diseases & injuries requiring amputation and the proper time for its performance; I shall next consider the modes of proceeding with the operation. The usual amputations may be performed in the manner that I shall point out. The leg may be taken off by the circular operation forming the flap of the skin and integuments. Or the incision may be made in an oblique direction from below upward & inward, thus forming a flap of the muscles. Lisfranc

operates by thrusting a Catling thro the limb and cutting from within outward & downward. — In Amputating the Thigh the circular operation answers very well & is the one usually performed in this Country. Should a different operation be preferred, the long Catling may be inserted at the middle of the anterior part of the thigh & passed along the inner side of the femur close to the bone, it is then passed out obliquely; the femoral artery must be immediately secured & then a corresponding operation is to be performed on the other side. The arm is to be removed in the same manner as the thigh, & the fore-arm as the leg, except that in the muscular flap operation, a flap is to be formed on either side of the bones superior and inferior. The Shoulder-Joint may be amputated in a great variety of ways, Dr Kennens plan or Dr Physicks is equally good. For the operation at the Hip Joint I should prefer Lisfranc's method. Several substances have been proposed for ligatures,

such as Buckskin, parchment, Catgut, Kid leather, &c
and these being composed of animal matter, it was
supposed that in the course of 2 or 3 days, the cavity
of the artery being by that time obliterated, the liga=
:ture would be dissolved in the fluids surrounding it,
& ceasing to be a source of irritation the wound
would soon heal up. The suggestion was made by
Dr Physick, and experiment has proved his views
correct. Hennen in cases of emergency proposes
pieces of arteries, nerves, veins & tendons. A fine fibril
from a tendon would perhaps make an excellent lig=
:ature; the Hottentots use it instead of thread. The
ligature however in common use is made of silk,
one end of which is left pendant from the lower part
of the wound the other being cut off close to the knot.
It has been proposed to cut off both ends of the
ligature close to the knot, close the wound & trust
to nature for its removal by absorption, & it was thought
that the adoption of animal ligatures would have

entirely obviated any objections to this practice. Both Hennen & Guthrie, report favourably of the plan, espe:
:cially in cases where the early healing of the wound is of primary importance. I think however the mass of evidence is against it. In dressing the stump the per=
:pendicular cicatrix is generally preferred & the mass of Tow in which the end of the stump was always imbedded is now very often omitted with advantage.

I have now finished my

"Cursory remarks" which perhaps are not so full as the subject might seem to demand. I believe however that I have treated of every thing of much import=
:ance connected with my subject. Did I feel dis:
=posed to yield to the "Cacathes Scribendi", I might no doubt swell my treatise to an imposing size and sharing the fate of but too many writers in this book-making age, find when I had done so, that the grain of wheat, which when by itself was worth picking up was now so hidden by bushels of Chaff

as not to repay when found, the trouble that was
necessary to discover it.